

OBSERVATIONS ON *DENDROLAGUS BENNETTIANUS*,
DE VIS.

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(Plates XLII.-XLIII.)

About a year ago Mr. D. le Souëf spent some time in Northern Queensland for the purpose of collecting Tree Kangaroos and other animals for the Melbourne Zoological Gardens. He was very successful, and obtained six examples of *Dendrolagus*, four of which reached Melbourne alive. Mr. le Souëf has published an interesting account of his experiences,* wherein he mentions that the kangaroos were identified by Mr. C. W. de Vis as the supposed species he had tentatively named *D. bennettianus*.

The daily papers of September 18th last announced that a steamer had arrived at Sydney from the North with eight cages of Tree Kangaroos. These animals, about sixteen in number, were captured, after considerable difficulty, on the Bloomfield River, and were shipped at Cooktown for delivery to the Zoological Gardens, Melbourne.

While on board, one of the smaller animals escaped from confinement and immediately jumped into the rigging, up which it went with amazing speed, and seemed perfectly in its element when in the vicinity of the mast-head.

* Victorian Naturalist, xi. No. 1, p. 3.

I regret that I missed the opportunity of seeing the animals alive. They were visited by my colleague, Mr. Robert Etheridge, jun., and our Taxidermist, Mr. J. A. Thorpe, and to them I am indebted for the following observations made upon them while in port :—

During the voyage the Tree Kangaroos were fed upon milk and unripe bananas, and, with one or two exceptions, appeared to be doing well. Their behaviour gives one the idea that they are nocturnal, or at least crepuscular animals. While in daylight they seem inclined to sleep; in this condition the body is bent forward until the snout is almost between the thighs, the fore feet being placed close to the cheeks.

Normally the ears have a horizontal aspect, but are drooped somewhat during sleep. When the animal is alarmed they are suddenly pricked, but never pressed backwards; in this respect they resemble the Phalangiers.

Although the arrangement of the hair was particularly observed, I am told that where the hair of the back and the face meet very little indication of a crest was noticed in the living animal.

It was further observed, and special stress is laid upon this point, that the tail was usually passed under the body and carried in front; also that it occupied a similar position when the animal slept. So constantly was the tail carried in this manner that my informants consider it an habitual trait of the creature.

This position would bring the ventral side of the tail uppermost, a peculiarity which will be further noticed. This habit, if such it proves to be, albeit somewhat curious, is not without parallel. We shall recall the habits of the *Lemuroidea*, members of which habitually sleep with their tails beneath them, but as this member is frequently passed round the neck or disposed of about some other part of the body, it does not follow that the aspect of the tail is reversed as in the *Dendrolagi*.

Mr. le Souëf also observed that these animals carried their tails differently to other *Macropodide*, for he writes* :—“When on

* *Loc. cit.* p. 13.

the ground their tails are curved upwards, and do not as a rule rest on the ground as with ordinary kangaroos."

Mr. Robert Grant, one of the Museum collectors, tells me that when engaged in obtaining *D. lumholtzi* in company with Mr. E. J. Cairn, he seldom saw them at rest, and never on the ground excepting when driven from a tree. He did, however, on one or two occasions observe them sitting on branches in the peculiar attitude mentioned.

He has given me some interesting information respecting the capture of this species in the Herberton district which it may not be out of place to mention here.

The native name is Mapi (Marpee, according to English pronunciation), and the animals are difficult to procure, as the blacks esteem them a delicacy and only surrender their captures when compelled. When a Mapi is discovered, a fence five or six feet in height and several feet in diameter is built of rattan or lawyer canes (*Calamus*) and bushes around the tree. Some of the blacks enter the enclosure, ascend the tree, and drive the animal down; it usually jumps to the ground, often from a height of twenty feet. Should it elect to descend the trunk, it does so tail foremost. On reaching the ground, the animal is eventually caught by the men surrounding the enclosure, generally by the tail, which member is dragged through the fence, the unfortunate Mapi being despatched with blows from a nulla nulla. The blacks will not venture within the fence on account of the dread in which they hold the powerful claws of the animal. The natives who hunted for Dr. Lumholtz called the animal Boongary, and adopted a somewhat different method of capture.*

A specimen of *D. dorianus* captured by Sir Wm. Macgregor and party during their ascent of Mt. Owen Stanley was described by Mr. C. Kowald to my colleague, Mr. Charles Hedley, as leaping down twenty feet or so from the tree when attacked by the hunters. Marks on the ground round the tree seemed to show that this was its usual mode of descent. Though too famished to

* *Vide* "Among Cannibals," p. 231.

be critical, the explorers considered the flesh of this animal very palatable.

Our Tree Kangaroos were obtained through the instrumentality of Mr. George Hislop, who, in response to my queries, has given me the following additional opinions or information respecting these interesting animals. He writes:—"In its native state I do not think the Tree Kangaroo would drink much water, if any, for the simple reason that it is generally found on the coast mountains about 1500 feet above sea level, and, as far as I know, well within the tropics. The vegetation at that altitude is almost invariably enveloped in moisture all night, just at the time when these animals are out-feeding on it, so that they must get nearly all the water they require with their food. In captivity I have known them drink large quantities of water.

"I have skinned twenty or thirty of these Tree Kangaroos, but have never noticed any parasite under the skin."*

My correspondent referred me to his son, Mr. Robert Hislop, for further information, who kindly wrote to me from the Bloomfield River as follows:—

"The native name of the climbing kangaroo is Tcharibeena. The blacks hunt them with dogs and are very fond of the flesh. I had often heard the blacks talking about them, but though I have been here nearly ten years, it was only about three years ago that I succeeded in obtaining one. In the day time they are found among the top branches of the trees and come down in the evening to feed upon creepers, ferns and fruit. I have found several down on the flat land, but as a rule they seem to be most numerous on or near the top of the hill ridges here, which are about 1500 to 2500 feet high. When found in the day time, the animals are generally asleep with the heads hanging on the breasts between the fore limbs, and the tail is used as a balancing pole.

"At first I could not induce the blacks to catch any of the Tcharibeenas, as they said that a full grown one would show fight, but when I went with them and caught the first one myself with

* Cf. "Among Cannibals," p. 235.

a lasso, they saw how easy it was and have since always caught them in this manner, excepting when out of reach; in this case they make the animal jump: as soon as it reaches the ground one boy holds its head down with a forked stick while another passes a bag over its hind quarters and slips it over its head.

“The best time to hunt them is early in the morning while the scent is fresh. A dingo or mongrel, the former preferred, is used, and follows the scent to the foot of the tree which the kangaroo has climbed to camp for the day. If the tree be a low one, it is tolerably easy to find the animal, but it often happens that they go from one tree to another before they find a suitable ‘camp,’ and then it becomes necessary for a native to ascend a high tree in the vicinity so as to be able to look down on the surrounding trees, as the kangaroo sits right out in the sun and is more easily seen from above than from below. If one approaches quietly, it is quite easy to catch the animal by the tail and slip it into a bag while up the tree; but the least noise rouses them, and it is surprising how quickly they can travel, jumping sometimes twenty to thirty feet from one tree to another, and I have seen one jump fully sixty feet from a high tree to the ground and not hurt itself at all. When jumping it seems always to land on its fore feet, and though I have repeatedly shaken them down from great heights I have never seen one injured, as they always, like a cat, fall on their feet.

“The tail is never used to hang by, only to balance with, though I have often seen one bend its tail over a branch while it reached down below the branch upon which it was sitting to secure some berries. The kangaroos can stiffen the tail so that it stands straight out like a rod. When caught and kept in captivity they soon become quiet and take readily to eating bread, sweet potatoes, apples, oranges, mangoes and the rinds of sweet potatoes and yams; also the leaves of several of the Eucalypti, white cedar (*Melia composita*, Willd.) and many other trees, the names of which I do not know. In the scrub they seem to have a partiality for the bird’s nest fern (*Asplenium nidus*), the moustera (? *Rhaphidophora pinnata*, Schott), and a small climber

like the pepper plant, and eat almost any of the wild fruits which are so plentiful here.

“The males are very pugnacious, and if two of them be put into an enclosure together will often fight until one is killed. They spar with the fore paws in quite a scientific manner, uttering grunts all the time, till one sees an opportunity of closing with the other, when he makes straight for the back of the neck, and if he succeeds in getting a grip with his teeth he shakes the other like a dog does a rat. Some of the old males have quite a harem and keep their wives from straying apart and do not let any other males go near them. I have found several of these families numbering from three to five females and one male. The young males, and also the very old ones, are generally found by themselves, or two or three of them together without any females. I think they breed twice a year and have only one young one at a birth. . . .

“The kangaroos are most plentiful among rocky hills where the scrub is thick and stunted, and though they feed both on the ground and in the trees and among rocks, I fancy that they feed mostly in the two latter places.

“The only enemy they have, as far as I can find out, is the animal my father told you about, which must be some kind of tiger-cat.* The glands situated immediately under the root of the tail contain a strong smelling yellow fluid in both male and

* There can be little doubt that the animal referred to is identical with the one mentioned in the Proc. Zool. Soc. 1871, p. 629, by Mr. Brinsley G. Sheridan. He gives an interesting account of a “Native Tiger” having been seen by his son on the shores of Rockingham Bay, who thus described it:—“As big as a native dog; its face round like that of a cat, it had a long tail, and its body was striped from the ribs under the belly with yellow and black.”

In P. Z. S. 1872, p. 355, the “Tiger” is again referred to from Cardwell, and although the animal was not seen, its footprint was sketched, and is reproduced. Mr. W. T. Scott, who contributed the note, ventured the opinion that it might be allied to the Tasmanian Tiger (*Thylacinus cynocephalus*), remarking “that a bullock-driver of ours, as long ago as 1864, came in one day with a story that he had seen a Tiger; but as he was a notorious liar we did not believe a word of it at the time.”

female. I notice in the very old males that the smell from these when cut is almost overpowering."

Of the sixteen animals previously mentioned, two died before reaching Sydney, an adult female and a half-grown male. These, together with two roughly prepared skins, were offered to the Australian Museum and purchased.

At the first glance it was apparent that the species was perfectly distinct from the Queensland form *D. lumholtzi*, Collett.* Further examination showed that it could not be reconciled with the descriptions of the Papuan forms *D. ursinus*, Müller and Schlegel, *D. inustus*, M. and S., and *D. dorianus*, Ramsay.

We find the animal again incidentally mentioned in the P. Z. S. 1873, p. 518, as follows:—"A letter was read from Dr. G. Bennett, referring to the supposed existence of a species of Tree Kangaroo (*Dendrolagus*) in Northern Queensland, some such animal being apparently well known to the blacks of Cardwell. Mr. Selater remarked that this might account for the stories of the supposed 'Native Tiger' in the same country."

Dr. Bennett evidently also inclined to this opinion, for in P. Z. S. 1885, p. 65, while writing about the Tree Kangaroo he says:—" . . . I may further remark that the size and deep scratches observed on the bark of the trees, gave rise to a report that a tiger-like animal was to be found in Northern Queensland, as no one believed that kangaroos could climb trees, being ignorant of the existence of arboreal kangaroos in New Guinea. . . ."

That the scratchings were caused by Tree Kangaroos is probably correct, but that the *scratchings* gave rise to such a report is, as we may see by the passages quoted, quite incorrect. It is positively asserted by the blacks over wide-spread districts, that some large carnivorous animal does exist in the higher part of the ranges, but nothing can induce them to visit these spots on account of the dread in which they hold the animal. As is well known, the natives believe in certain mythical creatures, the Bunyip for example, but which none claim to have ever seen. Respecting the "Tiger," however, collectors and settlers have met several blacks who affirm that they have seen the animal, and agree in describing it as large, with a big mouth and teeth.

Mr. Broadbent was specially deputed by the Queensland Museum to investigate the subject, but after much search he concluded that the animal was a myth, probably founded on *particularly* large *Dasyures*.

Considering how long other creatures have remained unknown, it is quite reasonable to suppose that such an animal may yet be found inhabiting the

* Proc. Zool. Soc. 1884, p. 387.

Mr. C. W. de Vis hesitatingly named an imperfect skin *D. bennettianus*,* and although the description is necessarily somewhat meagre, it is, I think, sufficient to justify me in regarding our specimens as identical with it. I am pleased to be able to more fully establish the species, and as we possess excellent material, I submit the following as a description of the adult female before mentioned. The measurements were made in the flesh.

Description.

Head and body...	610 mm.	Tail	631 mm.
Ear.....	38 mm.	Hind foot.....	134 mm.

Rhinarium tolerably clothed with short hairs, space between the nostrils naked. Fur soft and long, especially on the back and sides. The hair radiates from a point some distance behind the shoulders, whence it is directed upwards to the head; it meets the hair of the face in front of the ears and forms a tortuous crest, the central point directed backwards to between the ears; on the under side of the throat the hair is also reversed. Ears naked within excepting towards the tip, where they are scantily provided with long silky hairs. Tail cylindrical, thick at the base, tapering;

thick scrubs of Queensland, and the following account by Mr. Robert Hislop, who evidently fully believes in the existence of the animal, certainly appears to be most circumstantial:—"The blacks say that they have watched this animal's mode of attacking the kangaroo. It only does so when its victim is isolated from its mates and then only by stealth. It keeps at a distance from its prey until it can frighten it by suddenly rushing towards it, uttering screeches. As soon as the kangaroo turns its back or is in the act of jumping away, the cat springs on its back and crushes the base of its skull in its jaws, which the blacks describe as being very powerful. I have never seen this animal myself, but I have seen its tracks, which are very similar to those of a large dog and seem to be provided with long claws. The blacks describe it as about the size of a bulldog with long brindled fur and very large eyes. They are very frightened of it and will not go near any cave or hole where they think one might be, as they say it does not hesitate to attack a man and often kills their dogs."

* Proc. Roy. Soc. Queensland, iii. 1886, p. 11.

fur harsher than on the body, it gradually lengthens towards the tip and forms a distinct tuft.

Colour.—Face grey, passing into chestnut and rufous on the head, upper surface of body dark warm brown, black at and around point of radiation, and generally dark on the vertebral line; this colour passes into a lighter tint on the sides, haunches and rump; back of neck rich reddish-brown, fading into chestnut at the sides, but again becoming redder on the throat; this colour also extends along the front edge of the fore limbs. Eyebrows, eyelashes and whiskers black and scanty: the chin has also black whisker-like hairs. The lower surface is generally darker from the chest to the pouch, thence more rusty and lighter beyond. Fore feet black; hind feet black with lighter hairs above. All the toes and claws black. At the upper base of the tail is a conspicuous reddish-brown patch passing abruptly into black, which colour extends for four or five inches and almost as suddenly gives place to light rufous-brown; this tint extends to within a third of the tip and insensibly merges into black. The ventral surface is black throughout its length.

In the young male the colours are not nearly so rich, the back is grey, becoming lighter on the sides and rump, an ill defined vertebral line much darker: dorsal surface of tail darker than in the adult. The division between the colour of the limbs and the feet much more strongly marked.

The two skins purchased with these specimens are somewhat intermediate in age and colour. In both, the dorsal surface of the tail is very light, but all agree in having the entire ventral surface black.

The dorsal surface of an animal, including the tail, is usually darker than the ventral surface. To this rule exceptions are extremely few; an excellent instance is *Grisonia vittata*, Schreb.

In both the Queensland *Dendrolagi* the colouration of the tail is reversed, the ventral surface being the darker. From the habits of *D. bennettianus*, observed by Messrs. Etheridge and Thorpe, and of *D. lumholtzi* by Mr. Grant, it may be inferred that the change in posture caused this change in the disposition of colour.

Skull.—

Basal length	105	mm.
Greatest breadth	66	„
Nasals, length	45	„
„ greatest breadth	24.5	„
„ least breadth	12.5	„
Constriction, breadth	20.5	„
Palate, length	63	„
„ breadth outside M ²	32	„
„ „ inside M ²	21	„
Palatal foramen.....	5.4	„
Diastema.....	19.2	„
Basicranial axis.....	36	„
Basifacial axis.....	71	„
Facial index	197	„
Teeth, length of I ³	3.2	„
„ „ P ⁴	8.5	„
„ „ M ¹⁻³	17.2	„

Skull robust, more slender in the facial region, sides of muzzle concave; a pair of small prenasals (7 mm. in length) are separated from the nasals by a transverse suture. Nasals expanded behind, gently bowed in the middle, narrowest anteriorly: posterior suture somewhat recurved. Ascending processes of premaxillæ slightly broadened above, premaxillo-maxillary suture but little inclined. Naso-premaxillary short, little more than two-thirds the length of the naso-maxillary suture. Interorbital space narrow and concave. Frontal region not swollen. Fronto-parietal sutures produced backwards until they meet in a very acute angle. The median frontal suture does not reach this point, but at a distance of 10 mm. is interrupted by a distinct transverse suture which thus forms a small postfrontal. Temporal crests defined but not prominent. Interparietal large; its anterior suture forms a straight line. Foramen magnum broader than high.

Teeth.—The teeth are generally similar to those of *D. lumholtzi*. The canines are larger than I² and the main crest of the premolar

appears to be rather more external. The relative position of each row of teeth is slightly different owing to the narrower snout; instead of forming nearly straight lines, they converge somewhat anteriorly. In the lower jaw the premolar is in the same line with the molars, whereas in *D. lumholtzi* it inclines outwards. In this species also the external opening of the dental foramen is large and constitutes a direct perforation. In *D. bennettianus* it is small and deeply sunk, and the mental foramen is placed more forward, quite in advance of the premolar.

Being suspicious that this skull was abnormal as far as the prenasals and postfrontal are concerned, I had one extracted from a dried skin. This is unfortunately so battered about the muzzle as to render that portion useless for comparative purposes. There is no postfrontal and the fronto-parietal suture is rounded behind: it is therefore highly probable that the prenasals of the skull first examined may be only a dismemberment of the nasal. The damaged skull is from an immature animal and differs from the adult in having the fronto-parietal crests scarcely discernible and widely separated. The interorbital space is also proportionately broader.

Collett writes of *D. lumholtzi**:—"Somewhat to the front end of the interparietale, each parietale is perforated by a foramen [which I cannot discover in the other *Macropodidæ* which have come under my notice]; in the skull of a young individual [length 106 mm] it is indistinct on one side."

In all our specimens this foramen occurs on both sides, but not in all cases in the same relative position. Such foramina also exist in *D. bennettianus* and are placed slightly behind the front front edge of the interparietal.

Collett also says—"The palate is entire, and has no foramina palatina." One only of our examples shows a single inconspicuous foramen, but in both our skulls of *D. bennettianus* the posterior palate is perforated by two vacuities many times larger than the posterior palatine foramina.

* Zool. Jahrb. ii. 1887, p. 900.

In the generic description of the skull, Mr. Oldfield Thomas writes* :—"Posterior palate complete, without vacuities." This will therefore require to be slightly amended in order to receive *D. bennettianus*.

The distinguishing features may be summed up as follows:—

External Characters.

Fur on the back directed backwards, body brown, neck rufous, tail black ventrally, lighter dorsally.

Cranial Characters.

I^1 but little exceeding I^2 and I^3 in its downward projection. Canine larger than I^2 . Forehead not inflated. Fronto-nasal suture recurved forwards in the centre.

Externally the species appears to most nearly resemble *D. inustus*. The skull also agrees with that species and with *D. ursinus* in the non-inflated forehead, but differs from these and agrees with *D. lumholtzi* in the formation of the fronto-nasal suture.

I am much indebted to Mr. J. J. Fletcher, who has very kindly lent me his copy of Schlegel and Müller's work,† a reference to which has enabled me to compare *D. bennettianus* with the descriptions and figures of *D. ursinus* and *D. inustus*, therein described.

• DESCRIPTION OF PLATES.

Dendrolagus bennettianus, De Vis.

PLATE XLII.

Fig. 1.—Skull in profile; natural size.

PLATE XLIII.

Fig. 2.—The same from above; reduced.

Fig. 3.—The same, from below; reduced.

* B. M. Cat. Marsupialia, 1883, p. 93.

† Verh. Nat. Ges. Ned. (1839-44).